WHAT IS CLAIMED IS:

1. A method for measuring feature points of a waveform signal having irregular feature point values or irregular distances between the feature points, said method comprising the steps of: performing wavelet conversion of the waveform signal within a predetermined interval by using a predetermined mother wavelet and multiple scale levels; calculating squared mean for interval for each interval width corresponding to said scale levels in relation to a wavelet conversion signal for each scale level generated by the said wavelet conversion; defining a scale level at a point where the calculated value of the said squared mean for interval becomes maximum at an arbitrary point within the predetermined interval, as a dominant level for that point; and detecting points at which the said waveform signal reaches maximum value or minimum value for each interval width corresponding to the dominant level, as the feature points of the waveform signal.

2. The method for measuring feature points of a waveform signal as set forth in claim 1, wherein said wavelet conversion uses the following formula (1) , that is,

$$d_j(x) = b^j \int_{-\infty}^{\infty} \phi(b^j(x-k)) f(x) dx \qquad \cdots(1)$$

where f(x) is the waveform signal, $\psi(x)$ is the mother wavelet, b^j is a scaling parameter, b is a constant (b > 1), j is a scale level comprised of zero or a negative whole number, and k is a translating parameter.

3. The method for measuring feature points of a waveform signal as set forth in claim 2, wherein said mother wavelet uses a French hat wavelet transform which is defined by the following formula (2), that is,

$$\phi(x) = \begin{cases} 1 & -1 \le x \le 1 \\ -0.5 & -3 \le x < -1, \text{ or } 1 < x \le 3 \\ 0 & x < -3, \text{ or } 3 < x \end{cases} \qquad \cdots(2)$$

4. The method for measuring feature points of a waveform signal as set forth in claim 2, wherein said mother wavelet is a Mexican hat wavelet transform which is

defined by the following formula (3), that is,

$$\psi(x) = -\frac{1}{2}\frac{d^2}{dx^2}e^{-x^2} = (1-2x^2)e^{-x^2} \qquad \cdots(3)$$

5. The method for measuring feature points of a waveform signal as set forth in claim 2, wherein said calculation of the squared mean for interval uses the following formula (4), that is,

$$g_j(x) = 2^{-1} p_j^{-1} \int_{x-p_j}^{x+p_j} \left| d_j(k) \right|^2 dk \qquad \cdots(4)$$

where j is the scale level used in the formula (1), k is the translating parameter, and p_j is a constant that is set according to scale level j so that the constant p_j becomes larger as the scale level j becomes lower.

6. The method for measuring feature points of a waveform signal as set forth in claim 5, wherein p_j in said formula (4) for the calculation of the squared mean for interval is defined by the following formula (5), that is,

$$p_j = b^{-j} a \qquad \cdots(5)$$

where ***a*** is a constant determined by the support of the mother wavelet $\psi(x)$ used in the formula (1), b is the constant used in the formula (1), and j is the scale level used in the formula (1).

7. The method for measuring feature points of a waveform signal as set forth in claim 2 or 5, wherein the value of b in said formula (1) is 2.

8. The method for measuring feature points of a waveform signal as set forth in claim 1, wherein said waveform signal is a pixel light intensity or density information signal acquired from a target image such as wood specimen tree ring images or the like along a measurement line configured on said image.

9. The method for measuring feature points of a waveform signal as set forth in claim 1, wherein said waveform signal is a pixel light intensity or density

information signal acquired from a target image such as wood specimen tree ring image or the like along a measurement line configured on said target image that is further subjected to differential processing.

10. The method for measuring feature points of a waveform signal as set forth in claim 9, wherein said differential processing is a calculus of finite differences between multiple pixels separated by an interval of several pixels.

11. The method for measuring feature points of a waveform signal as set forth in claim 8, wherein when said waveform signal is a density information signal, said density information signal is f(x), said dominant level is j_d, a constant corresponding to said dominant level is q_{jd}, and an arbitrary point on said measurement line is x, then when the value of f(x) is equivalent to the maximum value $f_{max}(x)$ of f(x) of the interval $[x - q_{jd},\ x + q_{jd}]$, the point x is determined as the feature point which indicates the maximum density point within the tree ring layer.

12. The method for measuring feature points of a waveform signal as set forth in claim 9, wherein when said waveform signal is a differential signal obtained by differential processing of a density information signal, said differential signal is f(x), said dominant level is j_d, the constant corresponding to said dominant level is q_{jd}, and an arbitrary point on said measurement line is x, then when the value of f(x) is equivalent to the minimum value $f_{min}(x)$ of f(x) of the interval $[x - q_{jd},\ x + q_{jd}]$, the point x is determined as the feature point which indicates the late wood end within the tree ring layer.

13. The method for measuring feature points of a waveform signal as set forth in claim 8 or 9, wherein said measurement line is comprised of a main measurement line and multiple subordinate measurement lines which are equidistant parallel lines on either side of said main measurement line, and when waveform signal feature points are detected at a point that is the same distance from the starting end on said main measurement line and subordinate measurement lines, then those feature points are determined to be a feature point on the main measurement line

provided that one of the conditions is that the number of said feature points comprises at least a majority in relation to the number of measurement lines including the main measurement line and subordinate measurement lines.

14. The method for measuring feature points of a waveform signal as set forth in claim 13, wherein two subordinate measurement lines are configured respectively at both sides of said main measurement line, and when waveform signal feature points are detected at a point that is roughly the same distance from the starting end on said main measurement line and subordinate measurement lines, and when feature points are found on the main measurement line and on at least one of the two subordinate measurement lines that are positioned adjacent to said main measurement line, and on at least one of the other subordinate measurement lines, and when feature points are found on the two subordinate measurement lines that are positioned adjacent to the main measurement line, and on the other subordinate measurement line, those feature points are determined to be a feature point on the main measurement line.

15. The method for measuring feature points of a waveform signal as set forth in claim 8 or 9, wherein a smoothing process using peripheral pixel information is performed on the pixel light intensity or density information acquired from the target image along the measurement lines configured on the target image.

16. An equipment for measuring feature points of a waveform signal having irregular feature point values or irregular distances between feature points, comprising: a wavelet conversion means for performing wavelet conversion of a waveform signal within the predetermined interval by using a predetermined mother wavelet and multiple scale levels; a squared mean calculation means for calculating squared mean for interval for each interval width corresponding to said scale levels in relation to the wavelet conversion signal for each scale level generated by the wavelet conversion means; a dominant level decision means for defining a scale level at which the calculated value of the aforementioned squared mean for interval

becomes maximum at an arbitrary point within the aforementioned predetermined interval, as the dominant level for that point; and feature point detecting means for detecting points at which the aforementioned waveform signal reaches maximum value or minimum value for each interval width corresponding to the dominant level, as the feature points of the waveform signal.

17. The equipment for measuring feature points of a waveform signal as set forth in claim 15 further comprising distance calculating means for calculating distances between the feature points on the basis of the detected feature points of the waveform signal.